

REMARKS/ARGUMENTS

Claims 11, 12, and 15-23 are pending in this application. By this Amendment, Applicant amends Claim 11 and cancels Claims 13 and 14.

Claims 11-23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Applicant's Admitted Prior Art (AAPA) in view of Petit (U.S. 6,399,475). Claims 13 and 14 have been canceled. Applicant respectfully traverses the rejection of Claims 11, 12, and 15-23.

Claim 11 has been amended to recite:

An electrical contact component comprising:
a base to be mounted on a surface of a mounting board with a solder, the base having a first principal surface opposing the surface of the mounting board, a second principal surface substantially parallel to the first principal surface, and sides substantially perpendicular to the first and second principal surfaces and connecting the first principal surface to the second principal surface; and
a fitting portion continuously provided on the second principal surface, the fitting portion having a substantially tubular shaped fitting periphery; wherein
the fitting periphery of the fitting portion is electrically connected to the second principal surface and the sides of the base by metal films provided over their respective surfaces;
the metal films each include a first metal layer containing Ni as a principal constituent and Co, and a second metal layer containing Au as a principal constituent and overlying the first metal layer; and
the Co content in the first metal layer is in the range of about 10% to about 25% by weight. (emphasis added)

With the unique combination and arrangement of features recited in Applicant's Claim 11, including the feature of "the Co content in the first metal layer is in the range of about 10% to about 25% by weight," Applicant has been able to provide an electrical contact component in which fitting failure caused by the rise of solder used for surface mounting of the electrical contact components is prevented at low cost and without complicated steps. Particularly, the solder is prevented from rising to extend to a fitting portion of the electrical contact component after three cycles and after five cycles of passing through the reflow furnace when the Co content in the first metal layer is in the

range of about 10% to about 25% by weight (see, for example, paragraphs [0014] and [0062] of Applicant's originally filed Substitute Specification).

The Examiner alleged that AAPA Figs. 4-6 teach Ni and Au as first and second metal layers. The Examiner states, "The difference between Applicant's Admitted Prior Art and applicant's claimed invention is the absence of solder 32 on the second principle surface 12 in applicant's claimed invention (illustrated in applicant's figure 2). Further, Applicant's Admitted Prior Art does not show the first metal layer is Nickel-Cobalt."

The Examiner further alleged, "It is known in the art that solder migrates. [Petit] teaches (column 1, line 50) that solder migrates. Further, [Petit] shows applicant's claimed Nickel-cobalt as the first metal layer (column 1, lines 26-28) and gold as the second layer."

Thus, the Examiner concluded that it would have been obvious "to be able to use the teachings of [Petit] with Applicant's Admitted Prior Art. The rationale for such a rejection is that one skilled in the art could have combined the known elements and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention."

Applicant's Claim 11 has been amended to recite the feature of "the Co content in the first metal layer is in the range of about 10% to about 25% by weight." Support for this feature is found, for example, in Tables 1 and 2 and paragraph [0062] of Applicant's originally filed Substitute Specification.

Petit fails to teach or suggest any specific weight percentage of Co in the Ni-Co alloy layer or that the specific weight percentage of Co in the Ni-Co alloy layer could or should be limited to any specific range of values. Thus, Petit certainly fails to teach or suggest that the Ni-Co alloy layer of Petit could or should have a Co content in the range of about 10% to about 25% by weight, as recited in Applicant's Claim 11. Furthermore, Petit fails to teach or suggest that a weight percentage of Co in the Ni-Co alloy layer is a result-effective variable.

The Examiner is reminded that “[a] particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation.” In re Antonie, 195 USPQ 6 (CCPA 1977) and MPEP §2144.05(II)(B).

While “the discovery of an optimum value of a variable in a known process is normally obvious,” In re Antonie, 559 F.2d 618, 620 (CCPA 1977), this is not always the case. One exception to the rule is where the parameter optimized was not recognized in the prior art as one that would affect the results. *Id.*

In view of the fact that Petit fails to teach or suggest any specific weight percentage of Co in the Ni-Co alloy layer or that the specific weight percentage of Co in the Ni-Co alloy layer could or should be limited to any specific range of values, Petit clearly fails to recognize that the weight percentage of Co in the Ni-Co alloy layer is a result-effective variable.

In fact, Petit discloses that the anti-diffusion first metal layer 3 may include “nickel (Ni), cobalt (Co), or a nickel-cobalt alloy” (see, for example, col. 1, lines 23-31 of Petit). In other words, Petit discloses that Ni, Co, or a Ni-Co alloy are interchangeable with one another, and that any one of Ni, Co, or a Ni-Co alloy can be used as the anti-diffusion first metal layer 3 (see, for example, col. 2, lines 64-66). Thus, the specific weight percentage of Co in Petit is clearly **not** recognized in the prior art as being a result-effective variable, because the anti-diffusion function of the first metal layer 3 is obtained when Ni is used without any Co content whatsoever.

Therefore, Applicant respectfully submits that it would not have been obvious to modify the Ni-Co alloy layer of Petit so as to include the features of “the Co content in the first metal layer is in the range of about 10% to about 25% by weight” as recited in Applicant’s Claim 11.

Accordingly, Applicant respectfully submits that AAPA and Petit, applied alone or in combination, fail to teach or suggest the unique combination and arrangement of features recited in Applicant’s Claim 11.

Accordingly, Applicant respectfully requests reconsideration and withdrawal of the rejection of Claim 11 under 35 U.S.C. § 103(a) as being unpatentable over AAPA in view of Petit.

In view of the foregoing amendments and remarks, Applicant respectfully submits that claim 11 is allowable. Claims 12 and 15-23 depend upon Claim 11, and are therefore allowable for at least the reasons that Claim 11 is allowable.

In view of the foregoing amendments and remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

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